Remarks

Claims 1, 5, 6, 10, 11 and 15 are amended. Claims 1 to 15 are pending in this application of which claims 1, 5 and 15 are in independent form. Of these claims, claims 5 to 11 and 15 are allowed.

Claims 1 to 4 and 12 to 14 were rejected under 35 USC 103(a) as being unpatentable over Krimmer et al in view of Linkner, Jr. et al. The following will show that claim 1 patentably distinguishes the applicants' invention over this combination of references.

The applicants' invention is directed to an electromagnetic valve having an armature plate whereat a first flow channel and a second flow channel open. The first flow channel as well as the second flow channel extend up to the armature plate so that the connection of the two flow channels with each other can be switched via the armature plate. In a first position of the armature plate, the two flow channels are connected to each other and, in a second position, the two flow channels are separated from each other. When the coil is energized by a current flowing therethrough, the two flow channels are separated from each other. In the deactivated state of the valve (that is, when no current flows in the coil of the valve), the valve is open and the flow channels are connected to each other. The electromagnetic valve can, for example, be used for supplying fuel to an internal combustion engine. Because the valve is open in the currentless or deenergized state, it is ensured that a

supply of fuel is still possible when there is an interruption of the current supply to the coil.

From the above, it can be seen that the applicants' invention relates to an electromagnetic valve having an armature plate which is a so-called plate armature valve.

Krimmer et al also is directed to a plate armature valve. In plate armature valves of the kind disclosed in Krimmer et al, the iron core and coil are connected fixedly to each other and an armature plate, which is arranged on an end face of the iron core, is moveable. The armature plate is pulled by the iron core when there is a current flow in the coil. A repelling force on the armature plate can then not be generated by the iron core.

The spring disclosed in Krimmer et al operates against the force of the iron core when there is a current flow in the coil. If this spring were mounted on the opposite-lying side of the armature plate, then the spring and the magnetic force in the iron core would act in the same direction when there is a current flow in the coil. Since a repelling magnetic force cannot be generated by the coil and the iron core, there is no actuation possible any more of the valve. The valve is always open independently as to whether current flows in the coil or not. The valve of Krimmer et al cannot be so changed only by changing the arrangement of the spring that a currentless opening of the valve results. A currentless opening of the valve can only be achieved when the first flow channel in the peripheral region of the armature plate opens to the side of the armature plate facing toward the coil. In contrast, in Krimmer et al, the flow channel opens outside of the armature plate so that a currentless opening

of the valve is not achievable with this configuration.

In contrast to Krimmer et al, applicants' claim 1 states with specificity that:

> "a first flow channel opening out at said armature plate at said side facing toward said coil;" (emphasis added)

Also, in claim 1 the armature plate is defined as having a peripheral region and the first flow channel opens out at this peripheral region as positively set forth in the clause of claim 1:

> "said armature plate having a peripheral region and said first flow channel opening out at said peripheral region of said armature plate;" (emphasis added)

The foregoing is a sharp contrast to Krimmer et al wherein a currentless opening of the valve is not possible as explained above.

The valve in the secondary reference, Linkner, Jr. et al, has a basically different configuration. Here, there is no armature plate present; instead, an outer coil 160 and an inner coil 106 are provided which, with the core 112, are moveably mounted in the coil 160. Because of the magnetic flux, the inner coil 106 is moved to the center of the outer coil 160 when there is a current flow in the outer coil 160. In FIG. 2, for a current flow in the outer coil 160, a force results on the core 112 downwardly and in FIG. 3, a force results upwardly. With a corresponding configuration of the coil 106 and the core 112, a currentless open or a currentless closed valve is achieved with the arrangement shown in this reference (column 5,

lines 1 to 9).

In this combination of references, there is no suggestion as to how a plate armature valve can be configured as a currentless open valve in the context of an armature plate valve wherein there is always a pulling of the armature plate to the iron core when there is a current flow in the coil.

In view of the foregoing, applicants respectfully submit that claim 1 should now patentably distinguish their invention over the combination of Krimmer et al and Linkner, Jr. et al and be allowable.

Reconsideration of this application is earnestly solicited.

Respectfully submitted,

Walter Ottesen
Reg. No. 25,544

Walter Ottesen
Patent Attorney
P.O. Box 4026
Gaithersburg, Maryland 20885-4026

Phone: (301) 869-8950

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